Claims

[c1]   1. A method for a minimizing artifacts and total exam time between acquisitions in dual or multiple energy imaging, the method comprising:

(a) exposing a detector to a first exposure from an energy source during a first exposure interval;

(b) after said first exposure interval, obtaining a first image data set during a first read time;

(c) after said first read time, exposing said detector to a second exposure from said energy source during a second exposure interval;

(d) after said second exposure interval, obtaining a second image data set during a second read time;

(e) after said second read time, scrubbing said detector;

(f) after said scrubbing, obtaining a first offset image from said detector;

(g) after said obtaining said first offset image, obtaining a second offset image from said detector;

(h) applying said first offset image to compensate for charge retention effects in said first image data set; and

(i) applying said second offset image to compensate for charge retention effects in the second image data set.

[c2]   2. The method of claim 1, further comprising:

after said second read time, exposing said detector to one or more exposures from said energy source; and

before said scrubbing, obtaining an image data set for each of said one or more exposures from said energy source.

[c3]   3. The method of claim 1, further comprising:

repeating (a) through (i) for a plurality of frames.

[c4]   4. The method of claim 1, wherein said first exposure is a lower dosage than said second exposure.

[c5]   5. The method of claim 1, wherein said first and second exposures are at a dosage of about 0.1 milli Roentgen to about 0.5 milli Roentgen.

[c6]   6. The method of claim 1, further comprising:

after said first read time and before said second exposure interval, changing a gain of said detector.

[c7]   7. The method of claim 1, further comprising:

after said first read time and before said second exposure interval, changing a pixel acquisition resolution of said detector.

[c8]   8. The method of claim 1, wherein said detector comprises a number of cells, and said method further comprises:

binning pixels corresponding to cells in said detector to decrease a pixel acquisition resolution of said detector.

[c9]   9. The method of claim 1, wherein said detector is unscrubbed between said first read time and said second read time.

[c10]   10. A system for dual or multiple energy imaging, the system comprising:

an energy source configured to emit energy at a first exposure interval and at a second exposure interval after said first exposure interval;

a detector comprising a plurality of cells, said detector being configured to:

receive said energy emitted at said first exposure interval and provide a first image data set indicative of said energy emitted at said first exposure interval,

receive said energy emitted at said second exposure interval and provide a second image data set indicative of said energy emitted at said second exposure interval,

provide a first offset image data set, said first offset image data set indicating a retained charge in said plurality of cells at a predetermined amount of time after said second exposure interval, and

provide a second offset image data set, said second offset image data set indicating a retained charge in said plurality of cells at a predetermined amount of time after said first offset image data set is provided; and

an image acquisition module configured to apply said first offset image to compensate for said retained charge in said plurality of cells at said predetermined amount of time after said second exposure interval, and apply said second offset image to compensate for said retained charge in said

plurality of cells at said predetermined amount of time after said first offset image data set is provided.

[c11]   11. The system of claim 10, wherein said energy emitted during said first exposure interval is a lower dosage than said energy emitted during said second exposure interval.

[c12]   12. The system of claim 10, wherein said energy emitted during said first and second exposure intervals are at a dosage of about 0.1 milli Roentgen to about 0.5 milli Roentgen.

[c13]   13. The system of claim 10, wherein a gain of said detector is changed after receiving said energy emitted during said first exposure interval and before receiving said energy emitted during said second exposure interval.

[c14]   14. The system of claim 10, wherein a resolution of said first image data set is different than a resolution of said second image data set.

[c15]   15. The system of claim 10, wherein said first and second image data sets are obtained by binning pixels corresponding to said cells.

[c16]   16. The system of claim 10, wherein said detector is unscrubbed between said first and second exposure intervals.

[c17]   17. A method for a minimizing artifacts in dual or multiple energy imaging, the method comprising:
exposing a detector to a first exposure from an energy source during a first exposure interval;
after said first exposure interval, obtaining a first image data set during a first read time;
after said first read time, exposing said detector to a second exposure from energy source during a second exposure interval;
after said second exposure interval, obtaining a second image data set during a second read time; and
a step for reducing the time between said exposing said detector to said first exposure and said obtaining said second image data set.

[c18]   18. The method of claim 17, further comprising:

after said second read time, exposing said detector to one or more exposures
from said energy source; and

before said step for reducing, obtaining an image data set for each of said one
or more exposures from said energy source.

[c19]   19. The method of claim 17, wherein said step for reducing includes:

obtaining first and second offset images after said obtaining said second image
data set.

[c20]   20. The method of claim 17, wherein said step for reducing includes:

leaving said detector unscrubbed between said exposing said detector to said
first exposure and said obtaining said second image data set.

[c21]   21. The method of claim 17, wherein said step for reducing includes:

providing said first and second exposures at a dosage of about 0.1 milli
Roentgen to about 0.5 milli Roentgen.

[c22]   22. The method of claim 17, wherein said step for reducing includes:

after said first read time and before said second exposure interval, changing a
gain of said detector.

[c23]   23. The method of claim 17, wherein said step for reducing includes:

after said first read time and before said second exposure interval, changing a
pixel acquisition resolution of said detector.

[c24]   24. A method for a minimizing artifacts and total exam time between
acquisitions in dual or multiple energy imaging, the method comprising:

(a) exposing a detector to a first exposure from an energy source during a first
exposure interval;

(b) after said first exposure interval, obtaining a first image data set during a
first read time;

(c) after said first read time, exposing said detector to a second exposure from
said energy source during a second exposure interval;

(d) after said second exposure interval, obtaining a second image data set
during a second read time; and

(e) after said first read time and before said second exposure interval, changing a pixel acquisition resolution of said detector.

[c25]   25. The method of claim 24, further comprising:

after said second read time, exposing said detector to one or more exposures from said energy source; and

before said scrubbing, obtaining an image data set for each of said one or more exposures from said energy source.

[c26]   26. The method of claim 24, further comprising:

repeating (a) through (e) for a plurality of frames.

[c27]   27. The method of claim 24, wherein said first exposure is a lower dosage than said second exposure.

[c28]   28. The method of claim 24, wherein said first and second exposures are at a dosage of about 0.1 milli Roentgen to about 0.5 milli Roentgen.

[c29]   29. The method of claim 24, wherein said detector is unscrubbed between said first read time and said second read time.

[c30]   30. A method for a minimizing artifacts and total exam time between acquisitions in dual or multiple energy imaging, the method comprising:

(a) exposing a detector to a first exposure from an energy source during a first exposure interval;

(b) after said first exposure interval, obtaining a first image data set during a first read time;

(c) after said first read time, exposing said detector to a second exposure from said energy source during a second exposure interval;

(d) after said second exposure interval, obtaining a second image data set during a second read time; and

(e) after said first read time and before said second exposure interval, changing a gain of said detector.

[c31]

31. The method of claim 30, further comprising:

after said second read time, exposing said detector to one or more exposures

from said energy source; and

obtaining an image data set for each of said one or more exposures from said energy source.

[c32]   32. The method of claim 30, further comprising:

repeating (a) through (e) for a plurality of frames.

[c33]   33. The method of claim 30, wherein said first exposure is a lower dosage than said second exposure.

[c34]   34. The method of claim 30, wherein said first and second exposures are at a dosage of about 0.1 milli Roentgen to about 0.5 milli Roentgen.

[c35]   35. The method of claim 30, further comprising:

after said first read time and before said second exposure interval, changing a pixel acquisition resolution of said detector.

[c36]   36. The method of claim 30, wherein said detector comprises a number of cells, and said method further comprises:

binning pixels corresponding to cells in said detector to decrease a pixel acquisition resolution of said detector.

[c37]   37. The method of claim 30, wherein said detector is unscrubbed between said first read time and said second read time.